



Temperament and character in transsexuals



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ABSTRACT

The aim of this study was to evaluate personality in transsexuals. The Temperament and Character Inventory (TCI) profiles of 166 male-to-female (MF) and 88 female-to-male (FM) transsexuals were compared with those of a control group of males and females. MF and FM transsexuals scored significantly lower than males and females in RD4 (more independent) and C3 (more self-centeredness). MF transsexuals scored higher than males and females in HA4 (more fatigable), ST and ST3 (more spiritual acceptance), and lower in C5 (more opportunistic); moreover, they showed higher scores than males in RD1 (more sentimental) and lower than females in C (less cooperativeness). FM transsexuals scored lower than females in HA2 (more daring and confident), RD (less sentimental), and C5 (more opportunistic). Compared with FM, MF transsexuals scored higher on HA2 (more fearful), RD, RD1 (more sentimental), ST, ST2 and ST3 (more spiritual). All these differences were less than half a standard deviation except for C3. Data show that transsexuals and controls display a similar personality profile, even though there are some differential personality traits. Moreover, the personality profile of transsexuals was closer to the profile of subjects who shared their gender identity than those who shared their anatomical sex.

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1. Introduction

Transsexualism or gender identity disorder of adulthood or adolescence is characterized by a strong and persistent cross-gender identification and accompanied by persistent discomfort with the biological sex or sense of inappropriateness in the gender role of that sex. It is usually accompanied by the wish to make the body as congruent as possible with the preferred sex through hormone treatment and sex reassignment surgery (World Health Organization, 1993; American Psychiatric Association, 2000). However, information about whether behavior and personality in these subjects are congruent with the preferred sex is still lacking; this knowledge would provide valuable insights into the nature of this disorder.

Evolutionary psychologists have emphasized that divergent selection pressures on males and females are expected to produce consistent personality differences according to gender; greater sex differences are most likely to be found in traits and behaviors that ultimately relate to mating and parenting (Del Giudice et al., 2012).

Indeed, personality differences between men and women are well established in the literature (Mealey, 2000; Del Giudice et al., 2012). On average, females tend to be more nurturing, warm, affiliative and anxious than males, as well as less aggressive, impulsive, dominant, sensation-seeking, and risk-taking (Mealey, 2000).

In transsexuals, differences in personality between male-to-female (MF) and female-to-male (FM) subjects have been rarely reported, and the existing studies mainly assess the presence of psychopathology. The most commonly used psychometric instruments in the assessment of transsexual patients have been the Minnesota Multiphasic Personality Inventory (MMPI) (Hathaway and McKinley, 1982) and the MMPI-2 (Butcher, 2001). Specifically, several studies have found that transsexuals are notably free of psychopathology using these instruments (Miach et al., 2000; Michel et al., 2002; Vidal-Hagemeijer et al., 2003; Coussinoux et al., 2005; Gomez-Gil et al., 2008; de Vries et al., 2011). Two further studies have used structured clinical interviews for categorical personality disorder diagnosis according to DSM-III-R and DSM-IV criteria (Bodlund et al., 1993; Haraldsen and Dahl, 2000), and another report has used the Eysenck Personality Questionnaire (Eysenck and Eysenck, 1978) for dimensional evaluation of personality in transsexuals (Bozkurt et al., 2006). Bodlund et al. (1993) found significantly more criteria for pathologic personality among transsexuals (29%) than controls (17%), as well as more

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sub-threshold pathologic personality traits; however, their sample size was small (9 MF and 10 FM subjects). In contrast, [Haraldsen and Dahl \(2000\)](#) found that although the gender dysphoric patients generally scored slightly higher than the healthy control group, all scores were within the normal range, thus suggesting a low level of self-rated psychopathology and similar personality traits in transsexuals and controls. [Bozkurt et al. \(2006\)](#) found that transsexual participants showed significantly higher mean neuroticism scores than controls; however, the transsexual sample was also reduced ($n=52$) and limited to MF subjects. Given that transsexuals can be easily stigmatized, more studies are needed with larger samples and up-to-date instruments to dilucidate if their personalities are or are not different from that of the general population.

The Temperament and Character Inventory (TCI) is a self-report instrument based on the Unified Biosocial Theory of Personality of Cloninger; it measures four temperament dimensions and three character dimensions ([Cloninger, 1994](#)). It could be a well-suited instrument to evaluate personality in transsexuals due to its widespread use in both clinical and nonclinical populations. Furthermore, this instrument has been largely used to investigate sex differences in personality between men and women in a variety of cultures. Some research ([Cloninger, 1994](#); [Mendlowicz et al., 2000](#); [Parker et al., 2003](#)) and a recently published cross-cultural meta-analysis on sex differences in Cloninger's temperament dimensions ([Miettunen et al., 2007](#)) concluded that women scored consistently higher in the Harm Avoidance (HA) and Reward Dependence (RD) temperament dimensions. Similar differences have also been found in healthy Spanish ([Al-Halabí et al., 2011](#)) and Mexican ([Fresan et al., 2011](#)) populations. To the best of our knowledge, personality profile and sex differences according to the TCI have not been previously studied in transsexuals.

The aims of the present study were: (i) to compare the temperament and character dimensions of transsexuals with those of a control sample from the literature ([Al-Halabí et al., 2011](#)); and (ii) to evaluate sex differences between MF and FM transsexuals. Based on the literature ([Miettunen et al., 2007](#); [Al-Halabí et al., 2011](#)), we hypothesize that MF transsexuals, like control females, would show higher scores in the HA and RD dimensions than FM transsexuals. That is, personality would be congruent with gender identity.

2. Methods

2.1. Sample

The sample was comprised of 269 transsexual volunteers recruited through the Gender Identity Unit of the Hospital Clinic of Barcelona. This public hospital is the only center providing specialized and comprehensive psychiatric, psychological, endocrine, and surgical sex reassignment therapy for transsexual patients in Catalonia.

Diagnostic assessment of transsexualism, or gender identity disorder in adulthood or adolescence was formulated according to the 10th revision of the *ICD Classification of Mental and Behavioural Disorders (ICD-10)* ([World Health Organization, 1993](#)) or the fourth revised edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)* ([American Psychiatric Association, 2000](#)). The diagnosis was made after several sessions with two mental health professionals (psychiatrist and psychologist). We used semi-structured socio-demographic, clinical, and psychiatric interviews ([Gómez-Gil et al., 2009](#)). The unit has adopted the standards of care described by the guidelines of the World Professional Association for Transgender Health ([Meyer et al., 2002](#)). The present study includes transsexuals enrolled in previous reports with a focus on depression, anxiety and social phobia ([Gómez-Gil et al., 2012](#)) as well as on quality of life ([Gómez-Gil et al., in press](#)).

All participants experienced early-onset gender nonconformity (before puberty) and were right-handed in writing. Participants did not show neurological or major psychiatric comorbidity.

The control group for comparisons used in this study ([Al-Halabí et al., 2011](#)) comprised 404 healthy subjects (males and females), all of Spanish origin from the Asturias region, aged 20–60 years, with an average age of 41.0 (S.D.=11.5) for men and 40.1 (S.D.=11.0) for women.

The participation of the transsexuals was wholly voluntary and unrewarded. The study was approved by the Ethics Committee of the Hospital Clinic of Barcelona (Spain) and was conducted in accordance with the Declaration of Helsinki. Participants, or parents if the patients were under 16 years of age, provided written informed consent.

2.2. Instruments

The TCI ([Cloninger, 1994](#)) is a 240-item, self-administered, true/false questionnaire, developed to assess seven basic dimensions of personality. It includes four temperament dimensions: Novelty Seeking (NS), Harm Avoidance (HA), Reward Dependence (RD), and Persistence (P), and three character dimensions, Self-Directedness (SD), Cooperativeness (C), and Self-Transcendence (ST). The TCI has been reported to be valid and reliable for both healthy and psychiatric Spanish people ([Gutierrez et al., 2001](#)). Raw scores were converted to *T* scores, based on the control sample of [Al-Halabí et al. \(2011\)](#), in order to facilitate visual and statistical comparison in the graphs. Thus, 50 represents the control mean, while 40 and 60 respectively represent one standard deviation below or above the mean.

2.3. Procedure

All evaluations were performed in an office at the Mental Health Department of the hospital. Subjects were informed that the purpose of the study was to investigate their personality; none of them were aware of the specific nature of our hypotheses. Sociodemographic variables—age, educational level, employment status, and hormonal treatment history—were obtained from clinical records.

2.4. Statistical analysis

Data was analyzed using OpenEpi 2.3.1. Differences on TCI dimensions and subscale scores between groups were examined with Student's *t* test (MF transsexuals vs. control males, MF vs. control females, FM vs. control males, FM vs. control females, and MF vs. FM transsexuals). We applied Bonferroni's correction for 35 comparisons (7 dimensions \times 5 comparisons). Thus, significance level was set at $p=0.0014$.

3. Results

3.1. Demographical characteristics

The response rate was 90.7% of 280 patients who were invited to participate, with failure to participate being mainly due to declining to participate or to incomplete answers. The final study sample consisted of 254 transsexuals (166 MF and 88 FM).

Transsexuals were approximately 10 years younger than the control group (MF vs. male; $t=9.501$; $p<0.001$; FM vs. female; $t=9.015$; $p<0.001$), but no differences were found between MF and FM subjects concerning age, educational level, or employment status ([Table 1](#)). Hormonal therapy at the time of the study was more frequent in the MF than in the FM group (47% vs. 12.5%). Demographic and clinical characteristics from a similar Spanish sample have been described in detail elsewhere ([Gómez-Gil et al., 2009, 2012](#)).

3.2. Personality differences between transsexuals and the control group

As detailed in [Table 2](#) and [Figs. 1–3](#), neither group of transsexuals differed significantly from the control groups in any scale or subscale beyond half a standard deviation with the only exception of the variation in the C3-Helpfulness subscale.

Both the MF and FM transsexual groups scored significantly lower than the two control male and females groups in RD4-Dependence and C3-Helpfulness. MF subjects scored higher than control males and females in HA4-Asthenia, ST-Self-transcendence and ST3-Spiritual Acceptance, and lower in C5-Integrated Conscience; moreover, they scored higher than males in RD1-Sentimentality and lower than females in C-Cooperativeness. FM subjects scored lower than the control females in HA2-Fear of Uncertainty, RD-Reward Dependence, and C5-Integrated Conscience.

Table 1

Sociodemographic and clinical data from the transsexual patients.

Characteristic	MF transsexuals (n=166)		FM transsexuals (n=88)		Statistical comparisons	
	M	S.D.	M	S.D.	t	p
Age (years)	30.49	9.23	28.35	8.01	1.838	0.067
					χ^2 test	
	<i>n</i>	(%)	<i>n</i>	(%)	χ^2	<i>p</i>
Educational level					0.210	0.900
Primary and lower secondary school	92	(55.4)	49	(55.7)		
Secondary school and unfinished university studies	54	(32.5)	30	(34.1)		
University graduate	20	(12.1)	9	(10.2)		
Employment status					1.522	0.467
High-qualified job	21	(12.7)	14	(15.9)		
Low-qualified job	100	(60.2)	46	(52.3)		
Student ^a	8	(4.8)	8	(9.1)		
Unemployed or social support ^b	37	(22.3)	20	(22.7)		
In hormonal therapy	78	(47)	11	(12.5)	28.557	0.000

Note—^{a, b} Categories were collapsed for statistical analysis.

Furthermore, in order to control the possible effect of age, post-hoc comparisons were repeated in the subsample of transsexuals over 30 years old (mean age=38.80 years, S.D.=6.50 for MF and mean age=38.21 years, S.D.=5.45 for FM), with no significant differences in age with the control groups. Previous significant differences remained when comparing MF subgroup ($N=83$) and both the control males and females in regard to the total sample. In contrast, significance was lost when comparing both control groups with the FM subgroup ($N=28$). Nevertheless, effect sizes did not change, and there was a trend ($p < 0.05$) in the same direction in four subscales and in one scale (data not shown).

3.3. Personality differences between male-to-female and female-to-male transsexuals

MF subjects scored significantly higher than FM in HA2-Fear of uncertainty, RD-Reward dependence, RD1-Sentimentality, ST-Self-transcendence, ST2-Transpersonal identity, and ST3-Spiritual acceptance (Table 2 and Figs. 1–3). In a post-hoc analysis, we repeated the comparisons in the subgroup that had not initiated hormonal treatment, and the differences remained for all the scales and subscales with a $p \leq 0.001$ except for RD-Reward Dependence ($t=2.630$, $p=0.009$) (data not shown).

4. Discussion

The present study is the first to examine personality in a large sample of transsexual subjects of both sexes and to compare personality profiles with a control group from the literature.

The first relevant finding is that MF and FM transsexual subjects show normal personality scores. That is, differences with respect to the controls were less than half a standard deviation. Nevertheless, the significant differences, although clinically not important, may have some theoretical relevance.

Male-to-female and FM transsexuals present lower scores than both control males and females only on RD4-Dependence and C3-Helpfulness. Whereas the RD scale represents an inclination to respond strongly to cues of social reward and to be warm, friendly and compassionate, the subscale of RD4-Dependence refers more specifically to the need for emotional support and approval from others. Lower scores on RD4 (about half a standard deviation) suggest that transsexuals are more independent of how other people regard them and that they tolerate disapproval, social

pressure or ostracism better than the general population. Lower scores on C3 (almost one standard deviation, the largest difference) reveal trends towards self-centeredness, egotism, and selfishness. Moreover, transsexuals showed, if compared with the controls of both sexes, a greater tiredness and lack of energy (\uparrow HA4-Asthenia), though this only reached significance in MF subjects. This trend is not accompanied by other features of HA and has no clear interpretation. The authors did not have the impression in their clinical practice that transsexuals had more fatigue than the general population. Therefore, it is possible that transsexuals interpret the questions about fatigue on the TCI as psychological fatigue. In any case, the finding of higher neuroticism in transsexuals by Bozkurt et al. (2006) was not confirmed in our study using the HA scale. However, the differences in neuroticism found in the Bozkurt study were small and we do not know whether the results of these two studies are comparable.

Male-to-female subjects showed, unlike FMs, a greater tendency than control males and females to be more opportunistic and self-serving (\downarrow C5-Integrated Conscience) and a stronger inclination to mysticism, magical thinking, and spiritual beliefs (\uparrow ST3-Spiritual Acceptance). Compared only with males, the MF group showed greater sentimentalism, empathy, and intensity in reward-dependent responses (\uparrow RD1-Sentimentality). Moreover, compared only with females, FM transsexuals perceived themselves as more confident, calm and secure in unfamiliar or dangerous situations (\downarrow HA2-Fear of uncertainty), more tough-minded, unsentimental and socially insensitive (\downarrow RD), and more opportunistic (\downarrow C5). We cannot determine whether these traits differentiating transsexual from the controls reflect changes influenced by social and environmental factors, premorbid personality, or some kind of sample bias. We can speculate that the amount of personal, familial, work-related, and social difficulties transsexuals must solve before starting hormonal treatment (Gómez Gil and Esteva de Antonio, 2006), might shift self-preserving mechanisms toward being more independent, self-serving, and insensitive to social pressure. Alternatively, it could be that the more independent and tough-minded transsexuals are the ones who initiate the difficult process of sex reassignment, whereas the ones who are more dependent on approval and acceptance by others are more easily discouraged and remain concealed. Since social difficulties tend, like these traits, to be higher in the MF group (Gómez Gil and Esteva de Antonio, 2006), it might explain some added trait differences such as spiritual acceptance (greater magical thinking) in this group. Spiritual acceptance has been proposed as a

Table 2

Distribution and comparison of the TCI scales and subscales by sex in a transsexual sample (raw scores).

	MF transsexuals (n=166)	FM transsexuals (n=88)	Statistical comparisons						
			MF vs. Male ^a		MF vs. Female ^a		FM vs. Male ^a		FM vs. Female ^a
	Mean (S.D.)	Mean (S.D.)	t	t	t	t	t	t	t
Temperament									
Novelty Seeking (NS)	18.86 (4.87)	18.34 (5.16)	2.123*	0.154	0.940	0.945			0.785
NS1 [exploratory excitability]	6.52 (2.25)	6.08 (2.26)	1.504	2.706*	0.418	0.739			1.499
NS2 [impulsiveness]	3.59 (1.95)	3.44 (2.33)	0.858	0.136	0.138	-0.417			0.534
NS3 [extravagance]	4.98 (1.97)	4.82 (1.84)	1.205	1.276	1.811	0.431			0.645
NS4 [disorderliness]	3.76 (1.90)	4.00 (2.10)	0.204	1.116	1.140	1.800			-0.929
Harm Avoidance (HA)	16.34 (6.81)	16.40 (7.54)	1.297	-0.953	1.114	-0.692			-0.065
HA1 [anticipatory worry]	4.10 (2.42)	4.39 (2.71)	-0.647	-2.651*	0.359	-1.219			-0.872
HA2 [fear of uncertainty]	4.57 (1.56)	3.80 (1.74)	2.019*	-2.816*	-1.696	-5.669**	FM < F	3.598**	MF > FM
HA3 [shyness with strangers]	3.81 (2.34)	4.43 (2.58)	-0.220	-1.192	2.030*	1.160			-1.934
HA4 [asthenia]	3.86 (2.35)	3.78 (2.45)	3.250**	3.473**	2.407*	2.569*	MF > M, F	0.246	
Reward Dependence (RD)	16.58 (3.02)	14.97 (3.80)	1.900	-1.372	-1.801	-4.484**	FM < F	3.693**	MF > FM
RD1 [sentimentality]	7.85 (1.64)	6.82 (1.97)	5.623**	2.083*	0.377	-1.219	MF > M	4.444**	MF > FM
RD3 [attachment]	5.59 (1.98)	5.10 (2.19)	1.302	-0.522	-0.704	-2.251*		1.801	
RD4 [dependence]	3.14 (1.47)	3.05 (1.36)	-4.786**	-	-4.582**	-7.046**	MF < M, F	0.492	
					4.907**		FM < M, F		
Persistence (P)	5.03 (1.54)	5.07 (1.84)	2.659*	1.927	2.181*	1.627			-0.175
Character									
Self-Directedness (SD)	30.68 (7.03)	30.83 (8.21)	-0.437	0.648	-0.181	0.661			-0.151
SD1 [responsibility]	5.82 (1.82)	5.78 (2.03)	0.529	0.196	-0.290	0.000			0.141
SD2 [purposefulness]	5.99 (1.74)	5.90 (1.94)	1.458	1.752	0.767	1.009			0.378
SD3 [resourcefulness]	3.25 (1.43)	3.39 (1.44)	-0.458	1.273	0.373	1.812			-0.704
SD4 [self-acceptance]	7.03 (2.59)	7.45 (2.78)	-2.059*	-1.216	-0.470	0.266			-1.213
SD5 [congruent 2nd nature]	8.59 (2.44)	8.31 (2.66)	0.407	0.974	-0.589	-0.093			0.854
Cooperativeness (C)	30.90 (5.23)	31.65 (5.42)	-2.078*	-	-0.601	-2.207*	MF < F	-1.065	
				4.105**					
C1 [social acceptance]	6.54 (1.52)	6.89 (1.24)	-0.879	-1.790	1.141	0.470			-1.831
C2 [empathy]	5.14 (1.51)	5.38 (1.30)	1.274	0.000	2.400*	1.400			-1.243
C3 [helpfulness]	5.14 (1.47)	5.34 (1.44)	-7.845**	-	-5.460**	-4.649**	MF < M, F	-1.051	
				6.912**			FM < M, F		
C4 [compassion]	8.18 (1.98)	8.18 (1.98)	2.803*	1.097	0.432	-1.022			1.811
C5 [integrated conscience]	5.90 (1.48)	6.38 (1.36)	-4.629**	-	-1.434	-3.977**	MF < M, F	-2.481*	
Self-Transcendence (ST)	15.73 (6.93)	12.78 (6.81)	4.367**	7.911**			FM < F		
ST1 [self-fourgetfulness]	5.87 (2.62)	5.43 (2.77)	2.315*	3.604**	-0.159	-0.651	MF > M, F	3.248**	MF > FM
ST2 [transpersonal identity]	4.06 (2.35)	2.95 (2.15)	1.693	2.408*	0.564	0.630		1.253	
				2.979*	-2.445*	-1.560		3.668**	MF > FM
ST3 [spiritual acceptance]	5.80 (3.33)	4.40 (3.204)	5.905**	4.121**	1.182	-0.187	MF > M, F	3.235**	MF > FM

S.D.=standard deviation.

* $p < 0.05$.** $p < 0.0014$.^a Mean and S.D. of female and male data used as control group was obtained from the study of Al-Halabí et al. (2011).

mechanism that helps to deal with and give sense to suffering. Moreover, the greater sentimentalism of the MF group than in males, or the greater confidence and tough-mindedness of the FM group than in the females, might also reflect some premorbid traits.

The second relevant finding is that there are some differences between MF and FM transsexuals with respect to personality, and these differences were almost in the same scales and subscales (HA2, RD, ST, and ST3) as the differences found between males and females with a statistical significance of $p < 0.01$ (HA2, RD, RD1, and ST3) (Al-Halabí et al., 2011). Interestingly, these differences were like a mirror effect. That is, in our study MF subjects are more fearful, cautious and apprehensive (↑HA2), more affiliative,

sentimental and warm (↑RD), more acquiescent (↑ST2), and have more spiritual acceptance (↑ST3) than FM subjects. In the Al-Halabí et al. (2011) sample, significantly higher scores on these scales were found in females than males. Altogether, these sex differences between transsexuals are also in accordance with previous sex differences reported in the non-transsexual population in a variety of different cultures (Cloninger, 1994; Mendlowicz et al., 2000; Parker et al., 2003; Miettunen et al., 2007). Overall, these studies have concluded that women scored consistently higher in the HA and RD temperament dimensions (Miettunen et al., 2007). Therefore, according to our hypothesis, MF transsexuals, like control females, would show enhanced scores on the HA (HA2) and RD dimensions, compared to FM transsexuals. Our

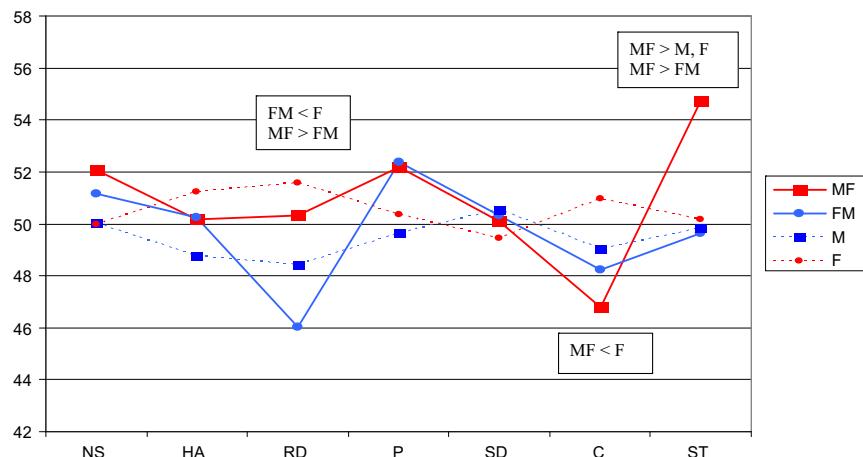


Fig. 1. Distribution and comparison of the TCI scales in male-to-female (MF) and female-to-male (FM) transsexuals with a control sample of males (M) and females (F) from Al-Halabí et al. (2011). Scores on the Y axis are T scores (Mean=50, S.D.=10).

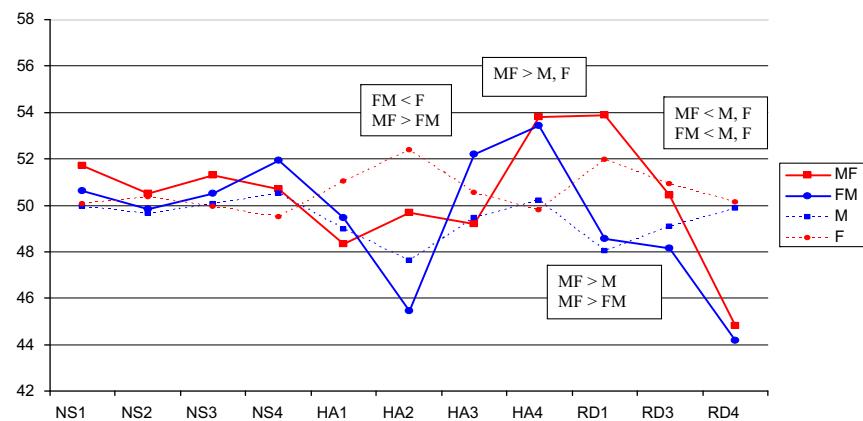


Fig. 2. Distribution and comparison of the temperament TCI subscales in male-to-female (MF) and female-to-male (FM) transsexuals with a control sample of males (M) and females (F) from Al-Halabí et al. (2011). Scores on the Y axis are T scores (Mean=50, S.D.=10).

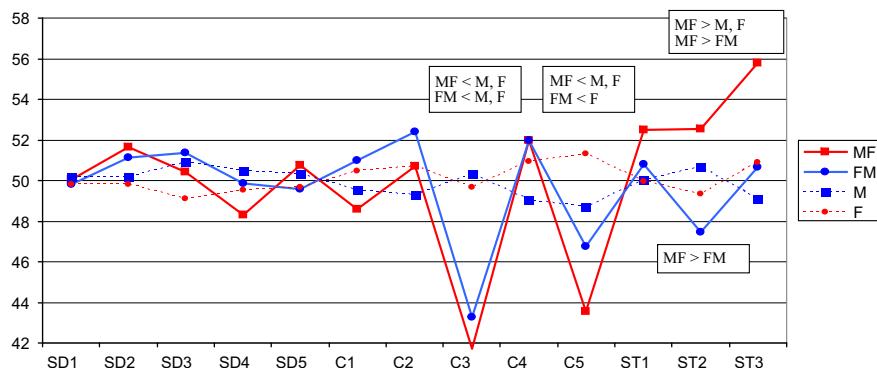


Fig. 3. Distribution and comparison of the character TCI subscales in male-to-female (MF) and female-to-male (FM) transsexuals with a control sample of males (M) and females (F) from Al-Halabí et al. (2011). Scores in the Y axis are T scores (Mean=50, S.D.=10).

results may also be in accordance with two studies in transsexuals assessing masculinity and femininity that suggest that, compared with a control group, MF transsexuals comply with stereotypes of femininity and FMs with stereotypes of masculinity (Herman-Jeglińska et al., 2002; Gómez-Gil et al., 2012).

The main limitation of our study is that we have used a control group from another study for comparisons (Al-Halabí et al., 2011). Thus, the original data files of the control group are not available, and we can only carry out *t*-test comparisons. Moreover, the

sample is from another region of Spain (Asturias). Nevertheless, Al-Halabí et al. (2011) also performed a cross-cultural comparison between two Spanish regions, Asturias ($n=404$ subjects) and Burgos ($n=240$ healthy subjects) (Mateos Agut and De la Gándara, 2001), and performed TCI dimensions stratified in four groups of age. For different regions, they did not observe statistically significant differences in any of the global dimensions, though differences were indeed observed in two subscales, HA4 and C3. As they argued, the genetic proximity of the population

and the cultural and environmental aspects of the individuals from the same country make the mean scores unequivocally similar. In addition, the control samples were statistically older than our sample. Nevertheless, comparisons were repeated in a subsample of transsexuals of a similar mean age. In the MF subgroup, the results were maintained. In the FM subgroup the differences were lost but this was probably due to sample size reductions since the effect sizes did not change.

In conclusion, our study provides the first evidence that transsexuals as a group show personality scores in the normal range and therefore display a personality profile that is similar to the general population's. However, though differences are minimal and clinically unimportant, they may have some theoretical relevance. Transsexuals show a significant tendency to be more independent, less cooperative (both groups), and more transcendent (specifically MF subjects) than the general population. Moreover, MF transsexuals scored higher than FM in essentially the same scales and subscales of the TCI in which females scored higher than males. This second finding would support the hypothesis that the personality profile of transsexuals is closer to the profile of subjects who share their gender identity than to those who share their biological sex.

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